

# AMATEUR RADIO



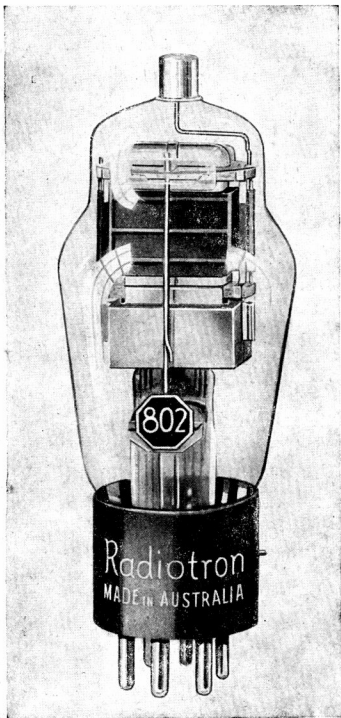
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Published in the Interests of Radio Amateurs and  
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VOL. 7 No. 8.

1st AUGUST, 1939

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## EDITORIAL



Let us have a round table talk about our Magazine. With this issue "Amateur Radio" ends its sixth year of publication, and with this issue it enters a new era of progress. For some time we, as a Magazine Committee, have realised that the publication was not improving and, as the old paradoxical adage says, "He who stands still, retreats." This issue shows you some evidence of what may be expected as a result of the Committee's new policy. A new style of printing and a new set-up will, we hope, make the Magazine more attractive and readable and at the same time more saleable to advertiser and reader alike. In addition, an alteration in advertising policy will give a service to the firms who make the Magazine commercially possible that we hope will be evident to you in increased advertising in the coming issues. Stating the position baldly, two new full pages of advertisements allows two new full pages of reading matter. But it is obvious to all that those new pages will not remain unless the advertisers see adequate return for their outlay. Therefore, it must be reiterated yet again, it is the bounden duty of every Ham to support wholeheartedly those firms who advertise in our pages.

Remember, too, that "Amateur Radio" is still an Amateur Magazine, run by Amateurs in their spare time, therefore, if the Committee increases the number of pages, you must help to fill them, as well as read them. The Northern Zone of Victoria has the right spirit for, as a start, a promise has been made of an article every month, and that spirit is further exemplified by this addenda to the first article, "You may condense it, rewrite it, cut out what you like, or even burn it!"

But what of the future? The Federal Executive meets on the same night as the Editorial Committee, thus Federal information will be published "straight from the horse's mouth" as it were. We could go on ad infinitum, but why spring all the surprises at once? Just one more, though, an increase in Magazine size to a larger page is contemplated, but not until next January issue, so that those of you who bind each volume, will not have two different sized Magazines to contend with in one year.

There is the Committee's side, now what do you think? As a regular reader of your own Magazine we ask two things of you—your co-operation and constructive criticism.



# The Perfect Half-wave Radiator

(Application of the coaxial type aerial for the higher frequencies).

By Don B. Knock (VK2NO) M.I.R.E. (Aust.)

President, U-H-F Section, N.S.W. Division W.I.A.

Aerial design, coupled with the trials and tribulations of feed-lines has been for half a lifetime of amateur radio, a source of suspicion and perplexity to the writer, as it has to countless other seekers of sky-ward seekers of R.F. efficiency. Through the years of DX, most of us have graduated from the Marconi against ground aerial system, through the Zepp, single-wire fed Hertz, Y matched impedance, twisted pair doublet, shorted stub arrays and the whole gamut of radiators in the search for the ideal, suited to one's particular location. When it comes to the DX bands of 7, 14, and 28 M.C. it can be said in most cases, that all of these systems can be made to perform well in a general sense, provided that the simple fundamental resonance at the desired frequency is carefully attended to. Because fairly good results can be obtained with aerial systems cut to Handbook chart lengths and slung almost anywhere above ground, one is apt to take things too much for granted, and to assume that things couldn't be much better. Results with aerials at the usual DX frequencies can lull one to a false sense of efficiency, for the reason that when signals peak between DX positions, **something** will be hearable and workable even with a "clothesline" aerial. DX is even worked on "cockie's wire fences," but only when "conditions" are just so. It is not until the serious experimenter delves for a few years into the why and wherefore of ultra-high-frequencies that he begins to realise just what is meant by aerial efficiency. His findings teach him much that enables similar application to lower frequency

work. Because of compact dimensions, aerials of 56 M.C. permit a great deal of interesting work with field meters and some encouraging and often disappointing results may be shown thereby. In the course of the past nine years, the aerials tested at VK2NO for 56 M.C. communication are legion and include plain radiators and high gain beams of all

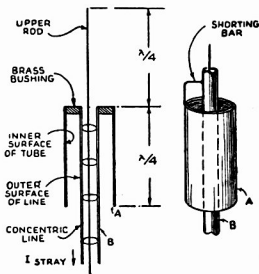


FIG. 1.

descriptions. In recent years had favoured either two-half waves in phase fed with matching stub and non-resonant spaced line, or Kraus's W8JK close-spaced two-section array. Both these give bi-directional coverage with a theoretically fair gain over a single half-wave radiator and consistently good results were obtained with such arrays. Nevertheless, there has always been the knowledge that despite all care, inevitable high loss has been present

in the feeder systems, especially where feeders must necessarily be lengthy. Some idea of the loss in the once popular E01 type cable at 56 M.C. can be obtained by quoting an experience with aerials at VK2EM, Killara, N.S.W. Here it is necessary to employ 80 feet of feeder to reach any array placed on a rotating arrangement above a tree. In order to resonate a shorted stub W8JK array, it was intended to excite this temporarily from a plain doublet placed adjacent. 80 feet of this twisted pair was connected to the doublet and stretched out from the shack. It was found that little or no R.F. could be found in the doublet from a three stage transmitter using PP 809's in the final with 50 watts input. The cable absorbed the lot. The load on the final remained the same with the doublet removed from the line, showing that the line was doing all the loading. Lengthy twisted pair was from that time ruled out for feeding 56 M.C. aerials. Fair results were obtained with a 600 ohm line using 14 B and S with 6 inch spacing, but standing waves could never be completely removed. The reason for this is that 6 inches spacing is quite an appreciable portion of a half-wave at 56 M.C.; a point not likely to be realised by many. The answer to all 56 M.C. aerials, and aerials for any of the higher frequencies, was solved when engineers of the W.E. Co., U.S.A., recently evolved a highly efficient form of coaxial aerial; simple in construction and undoubtedly the closest approach to the perfect half-wave radiator.

Following on the introduction by W.E., an article in "QST" dealt with this aerial in practical form and as Bassett concentric cable is now available in Australia (from VK 3ML) it was decided to make one up for 56 M.C. forthwith. This was done with very satisfactory performance, with the result that the W8JK vertical at VK2NO was immediately discarded. It was found that with the coaxial aerial 30 feet above ground, signal reports in all directions gave a very definite increase over the W8JK with its computed gain of 5 Db. In fact, W.E. claim a gain of 8Db over a "J" aerial for the coaxial in all directions. Having

reached this stage it was decided to back the coaxial with a half-wave reflector spaced a quarter-wave behind and controlled for 360 degree rotation from the shack. At Burwood, on the other side of Sydney, from VK2NO, VK2IQ made painstaking signal measurements on the signal, using a superhet receiver with calibrated S meter. The coaxial aerial plus reflector gives a gain of 40Db over receiver background there. In S strength the reading is R10 with aerial full "On" and the front to side-minima drops to R5. Figure 1 shows the electrical arrangement of the aerial, and be it understood that concentric cable feed is imperative. Bassett type

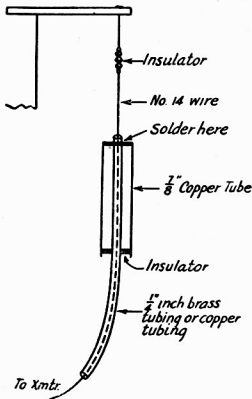
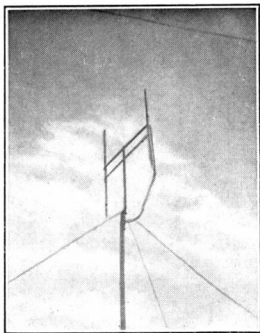


FIG. 2.

64/200 cable is used and the loss in 100 feet length is neither here nor there. A new circuit element is evident in the cross section of the aerial in Fig. 1. The enclosed sheath of the transmission line acts in conjunction with the inner surface of the larger surrounding tube to form a short-circuited quarter wave concentric line. Characteristics of this section of line cause an extremely

high impedance to be created across points A and B. This is equivalent by simple analogy to a High Q anti-resonant circuit which isolates the pole below point B from the aerial, and reduces stray pole current to a minimum. **Thus the aerial can be erected on a metal pole without fear of loss.** When this aerial is supplied with power, its centre is at minimum potential, the top at high potential, and the bottom of the tube at high potential. **The presence of the High Q anti-resonance circuit allows this high potential to exist even in the immediate proximity of the transmission line!**

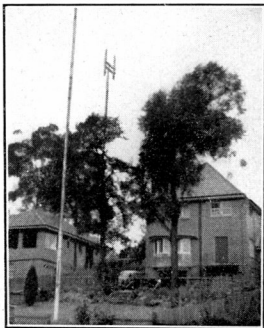


THE ARRAY AT VK2NO.

In other words "away with feed-line troubles" for that is just what it does. Fig. 2 shows the "QST" suggestion for construction, and as may be seen, it is simplicity itself. The top quarter-wave wire is the continuation of the inner conductor of the concentric feed line which passes up coaxially in the large metal tube forming the lower quarter-wave section of the aerial. In the writer's case, this is of seamless 22 gauge seven-eighths inch brass tube, and 4 feet long. At the top of this tube, where the inner conductor emerges, the outer conductor, which is the braid in the Bassett cable used, is connected to the seven-eighths brass

tube. This is done by making a brass disk to fit the top, with a quarter inch hole to pass the Bassett cable through. The braid is then soldered to the disk. At the bottom, is a disk of Bakelite to hold the cable centrally in the tube, but in the writer's construction, two more such disks are included at intervals inside the tube to ensure centralisation. That is all there is to the aerial and the easiest way to arrange it is by using a 9 feet length of 1 inch square timber with stand-offs. Strip metal clamps around the brass tube hold it securely to stand-offs.

A word about lengths for various frequencies. It is found that chart lengths for a half-wave aerial in free space are less than 5% for the frequencies stated with this aerial. Four feet each side puts the aerial resonant around 56,050 K.C. One way of getting dead tuning is to make the brass tube 3 feet 9 inches long and to make a sliding sleeve over the bottom end, which can be clamped in place when adjusted



VK2EM's ARRAY.

The top wire can be pruned in the usual manner, or if  $\frac{1}{4}$  inch copper tubing is used, that also can be made less than 4 feet long, and a sliding extension used. It was found that with an input of 150 watts to the crystal controlled TX at VK2NO on 56,074 K.C. that although an

R.F. meter in with the inner conductor of the Bassett cable showed  $1\frac{1}{2}$  amperes, it is impossible anywhere along the line to get an indication of R.F. in a tuned absorption meter using a 2 volt pea-lamp or sensitive neon tube. That means that the R.F. is going just where it is wanted. Fig. 3 shows the array in the sky at VK2NO, and Fig. 4 shows a similar array made by the writer for VK2EM. Although VK2EM is about 17 miles from VK2NO and well screened, his signal is so powerful that everything needs to be shut down on the 7 valve superhet. Same applies at the other end. VK2LZ 60 miles away in the mountains says that the signal from both stations simply folds up the tuning eye on his receiver and all Sydney and district 56 MC stations report amazing increases in signal strength. As may be seen, the systems are used vertically polarised, all N.S.W. stations us-

ing vertical in preference to horizontal systems. Other stations now under way with coaxials are VK2MQ and VK2VN. Apart from 56 MC it will be at once apparent that the idea can be applied with great advantage to 28 and 14 MC. A semi-vertical coaxial for the latter band will be in use at VK2NO in the near future. A word of warning. A half-wave reflector spaced a quarter-wave behind has little effect on the centre impedance of the aerial, but if the method is applied to close spaced arrays, then Bassett cable of lower impedances than 64 ohms must be used accordingly. The writer can say without fear of contradiction that no previous form of half-wave arrangement can compare with the coaxial. It is well worth the small time and trouble taken, and with the cable now available at very reasonable prices, expense is no real obstacle.

## Goniometer Rotation of Beams

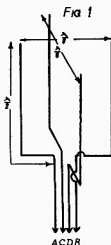
L. H. Vale, VK3WK, 2ACU.

Of recent years, the swing to beam antennas, both as a means of reducing interference in reception, and to increase the transmitted power in a given direction, has been most marked, especially on the higher frequency bands. Those experimenters who are able to erect stationary beams and use switches to change their direction of transmission and direction are indeed the most fortunate, but one has only to listen on the 14 mc. band to realise how many are not so fortunate and therefore use small antennas which can be mechanically rotated.

These rotatable beams are very effective, but have quite a few disadvantages. The tower must be very rigid and strong to take the weight of the bearings and other apparatus necessary for the rotation of the antenna, there must be some means of rotating the feeders to the antenna without detuning the aerial or altering the impedance of the feeders, and it generally takes quite

a while to rotate the antenna even a few degrees, especially if it is situated far from the operating position.

A system of electrical rotation, wherein the actual antenna is not rotated but rather the power supplied to the antenna, should offer quite a few advantages. A similar



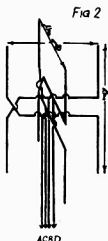
system is used for direction finding. Instead of using a rotatable loop aerial, two perpendicular loops are used and are connected by four equidistantly spaced feeders to two correspondingly vertical coils, in the centre of which is another coil which is mechanically rotatable through 180 degrees. These three coils form an apparatus which is known as a goniometer.

A scheme, which the writer has had in mind for some time, employs four vertical half wave elements with about eighth wave spacing—as shown in Fig. 1. The elements are correspondingly connected to four equidistantly spaced feeders which are taken to the shack. If it were desired to use the antenna on two frequency bands, the feeders could be taken from the centre of the

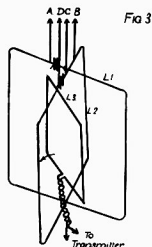
and would also have the advantage of being a two band antenna.

The four feeders are connected to the corresponding ends of the coils in the goniometer. In the goniometer constructed, here for 14 mc work four turns were used on the feeder coils, and the search coil was 2 turns and connected to a link in the plate coil of the transmitter. The coils were parallel tuned. A schematic diagram of the goniometer is shown in Fig. 3. Coils L1 and L2 are mounted perpendicularly to one another and the search coil, L3, is rotatable through 180 degrees so that it may be set parallel to L1 or L2 or at any intermediate point.

The explanation of the operation of the system is as follows:—In Fig. 4, the feeders are disregarded and the radiators are considered as being



radiators—as shown in Fig. 2. This would be a practical way of erecting a rotatable beam for the 7mc band,



connected directly to their corresponding coil on the goniometer. When the search coil is parallel to coil AC

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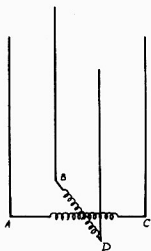
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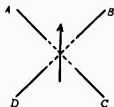
the elements A and C will act as a vertical W8JK beam, and radiate bidirectionally in the direction of a line passing through the elements A and C. Because in this position, the search coil is at right angles to coil BD and the feeders and radiators are equidistantly spaced from each other, radiators B and D will be inoperative, when the search coil is rotated 90 degrees so as to be parallel to coil BD, by the same reasoning the radiation direction is also rotated

Fig 4



90 degrees so as to be on a line passing through radiators B and D. If, however, the coil is only rotated 45 degrees to a position shown in Fig. 5a. The currents in radiators A and B will be in phase with each other, similarly D and C also, but A will be oppositely phased to D and B to C. The radiation, therefore, will be in a direction parallel to a line passing through B and C. It will be noticed that the direction of radiation corresponds exactly to the position of the search coil. If the coil is ro-

Fig 5a



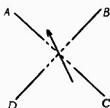
tated to the position shown in Fig. 5b so as to be nearer coil AC, radiators A and C will be more out of phase than B and D, and the radi-

ated energy will again be in its corresponding position in respect of the search coil. It will, therefore, hold that the radiation of the antenna, which is bidirectional, can be rotated to any direction by rotating a coil on the operating table.

If the antenna, shown in Fig. 2, is used, some means such as tapping the coils would have to be applied to the stationery coils on the goniometer to allow for band changing. The method of antenna tuning would, of course, depend upon the length of feeders.

In experiments made, it was found

Fig 5b



necessary to have variable coupling of the link in the transmitter coil.

Although the writer had constructed a beam, as shown in Fig. 1, and a goniometer, it was not possible to erect the antenna at the time, and so the system has not been given a practical try out. Although most of those who have been told of the idea were keen about it, the writer does not know of anyone who has tried it, and so would be very interested to hear of practical results.

### BIASED.

By VK3OC.

To begin with, perhaps a few words of explanation regarding this monthly feature would not be out of place. Both the Magazine Committee and the Council of the WIA refuse to be held responsible for any views expressed herein, and for my own part I would like to make it clear that any reference to persons living or dead, events real or imaginary, is purely co-incidental, and in any case, whatever it is—I deny it.

Having settled that, the idea is to tear things to pieces with an ardour worthy of a better cause. And what more appropriate start could be made than on "Amateur Radio" itself. Forgetting the unfortunate issue of October 1935, the magazine was first presented to an unsuspecting public in October, 1933, and by

process of effluxion of time and simple arithmetic is almost six years old. With the potential support here in Australia for a journal of this type, it should by now be a much better and more comprehensive publication than it is, more especially in view of the fact that overseas contemporaries with more restricted fields than we have, can do immeasurably better. You know the reason as well as I do. If you are a CW man, spend a fraction of the time you use producing those gorgeous key clicks and breathtaking yoops, in telling your fellow hams through the magazine, how you do it. They would like to know. If you happen to be a 'Phone man, use this medium to reassure your fellow men that the noises you produce are not caused by gargling close to the microphone with the gain full on. They won't believe you, but it would make interesting reading. If your tastes lean towards the erection of eighty feet masts supporting wierd and imposing arrays, write an article on how you single handed erected them, even if actually it

took ten men and the local fire brigade to avert catastrophe. In other words, do something to make "Amateur Radio" the magazine it should be.

I had the pleasure of seeing a copy of the last Examination Paper for the AOPC the other day, and judging from that fact that I could have managed about 60 marks myself, should think that 3RX will manage to push quite a decent percentage of his class through. The paper struck me as being a particularly good one, inasmuch as it covered practical ham problems and conditions. Congratulations to whoever set it.

There is a certain satisfaction in the "I told you so" attitude. The current issue of QST, in which particulars are given of a General Amateur Poll on the question of whether 7200—7300 kc should be opened to 'phone, brings to mind that a few months ago myself and a few others put up a scheme, which included 'phone restriction to this channel on 7mc. However, prophets are invariably without honour in their own countries.

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## 28—56 MC Notes

A. Pritchard, VK3CP

Ten metres has been rather erratic the last few weeks and the band went rather dead before last month's notes came out in print. Some days the W's came through from 7.30 a.m. with good strength, although around noon seems to be the sure time to get through at present. The VK's came up in strength due to this short skip, although VK6 was the only easy distance, and VK6MW had an outstanding signal during the late Sunday afternoons. The outfit has a 6A6 co-doub (6L6 doub. 5mx) 807 final at present—2 808's gave up the ghost and were used as the final. The modulator has a D104 xtal mike into 6J7, 6L7 automatic mod. control, 6J7, 45's PP, 809's Class B—coupled by a UTC, S21 universal Mod. transformer. A nice line up is complete with a National FBXA and pre-selector for receiving. Our old friend, Keith, of 3HK, is back on 10, and is in great demand with his 3 inch cathode ray tube, so there should not be any excuse for over mod. 3HK has been testing different automatic modulation control circuits and finds the set up given in June "Radio" (USA) very effective, and on an average it is possible to turn the gain up, as much again. The circuit given will take the States kilowatt jobs, so an '80 for the rectifier is OK as far as VK is concerned. Briefly the system consists of a voltage divider across the output of the Class B transformer and the  $\frac{1}{2}$  wave rect. valve across a portion of this resistance. The rectified bias voltage is fed through a resistive decoupling net work back to the 1st valve in the amplifier, the 6L7's injector grid. The system gives excellent results and doesn't cause noticeable distortion. VK4 has 3 active hams in 4HR, 4AP, and 4JP, the latter often being heard here with good strength. Feeders are coming into the light for improvement and the co-axial cable seems to be gaining favor. K6PLZ and K6OQM

both outstanding sigs, use this  $\frac{1}{2}$  wave matching system. The former has an outside tube  $1\frac{1}{2}$  inch diam. and inside tube  $\frac{1}{2}$  inch diam. and 85 per cent. of an electrical  $\frac{1}{2}$  wave long, i.e., 7 feet  $2\frac{1}{2}$  inches long for a freq. of 28650 KC. The latter uses an outside tube of 9/32 inch diam. and a No. 9 B & S copper wire, or No. 11 SWG and a  $\frac{1}{2}$  wave long. Two new signals on the band come from VP3CO and K5AT, and are often heard called. The Africans ZS5DD and ZS5AW are the only stations heard during the month. VK3HG, using 30 Watts to a 807 final, is doing very well on 10, although being approximately 180 miles from Melbourne, is in the skip for us. VK2 has active stations in 2ADT, 2QM, 2AFE, 2GU. South Australia has 5IT and 5GM. All VK's are requested to keep a look out for VK9VG in New Guinea, although no information is at hand regarding times, etc. 56MC is settling down to definite schedule time in VK2 and last month's AR gives all necessary information. With so many xtal controlled outfits on, it's a wonder interstate contacts have not been reported. In VK3, Dennis of 3KP, is giving a helping hand and the details of an interesting contest for 56MC should be in the mag. very shortly. Herb, of 3JO, contacted 3LT of Carrum and 3BH of Mornington, tone keyed sigs for each end. VK3ZD is xtal controlled on 5 and a long wire antenna is giving excellent results for general coverage. 3EH is also xtal on 5 and the outfit has 802, tritet co, 807, 807, 809 pa on 10 or doub 5 and 809 final; Ern is doing very well. 3KP brought back on HRO from the States and, as he had no suitable receiving antenna, an interesting comparison was obtained here at 3CP for both receivers. R meters compared very favorably. The HRO is certainly a beautiful job.



**FEDERAL AND VICTORIAN QSL BUREAU.**

R. E. Jones, VK3RJ, QSL Manager.

For a write-up in a large U.S.A. weekly, the Radio Editor, Owen P. Callin, Ohio State Journal, Columbus, Ohio, U.S.A., desires photos and station dope and descriptions from the following VK stations 2ABV, 2TO, 2NO, 2HP, 2ZC, 2BK, 2UC, 2ADT, 2CC, 2ADU, 3HG, 3BZ, 3EN, 3XJ, 3XP, 3XG, 3ZU, 4KS, 4HG, 4KH, 4JP, 4KO, 5CS, 5JS.

VK9WL, Boz 2, Salamaua, New Guinea, has been appointed QSL Manager for New Guinea.

Gil, of VK9VG, complains bitterly of the tactics of W stations with E.C.O., who tune their rigs to the station 9VG is working.. W's are keen to work VK9, but Gil likes a bit of variety in his DX. Such tactics show poor sportsmanship.

VK9VG is on 28 MC, but does not state his frequency. He states he has called plenty of VK's without result. He is visiting Australia next year and now possesses a new NC 101X with a DB20 pre-selector and

also a RME frequency expander. Desires reports on his 28 MC sigs.

VK3ZS, although licensed, has not yet been on the air. Someone, however, has kindly worked a few countries for him.

The newly formed Radio Club, Uruguay, has for its office bearers, CX3AY, Presidente, CX3BM Secretario. Its official station is CX2BU, whilst its QSL Bureau is Box 37 Montevideo, Uruguay. Not having VK4JU here to translate for me, my knowledge of Spanish does not permit giving further details.

Snow, of VK3MR, acquired two doses of 'flu whilst holidaying with VK3BM and came home to convalesce. Suburban farmers apparently soften by intimate contact with civilisation.

Mac, of 3XZ/3UL is busy saving up to erect a "Poor Man's" rotary. Has planted a few bamboo shoots to provide the necessary spreaders.

Jim Corbin, VK2YC, N.S.W. QSL Manager, has moved his QRA to:— 78 Maloney Street, Eastlakes, via Mascot, N.S.W.



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# Contest Notes

R. E. Jones, VK3RJ, Federal Contest Manager.

## VK-ZL 160 METRE C.W. CONTEST

Attention is directed to this contest, which will commence on September 2, 1939. See "Amateur Radio," June issue, for Rules.

## VK-ZL DX CONTEST.

The annual VK-ZL DX contest will take place during October next. The contest is under the control of the N.Z.A.R.T. this year and rules will appear in the September issue of "Amateur Radio."

## THE ALL BAND VK C.W. TROPHY

This contest will be an Interstate Test and not an individual one as previously held.

This Trophy will be competed for annually, and will be awarded to the State having the highest aggregate score of its first three competitors.

Rules are as follows:—

1.—The contest is open to all licensed amateurs, but only members of Wireless Institute are eligible for awards.

2.—The times of the contest are as follows:— From 1400 E.A.S.T. Saturday 16th September until 2359 E.A. S.T. Sunday 17th September 1939, and from 1400 E.A.S.T. Saturday September 23rd until 2359 E.A.S.T., Sunday 24th September, 1939.

3.—The test is of contact nature and with each contact a 10-letter cypher must be exchanged before a point is scored.

4.—Stations with which an entrant can work are stations in Australia and New Guinea, outside the competitor's own State.

5.—Any station can be contacted once on each band, each week-end.

6.—States are as follows:—VK2, VK3, VK4, VK5, VK6 VK7, VK8 and 9 combined.

7.—Licensed power must not be exceeded, and infringements of the Postmaster-General's regulations may mean disqualification.

8.—One point is scored for each cypher exchanged. Total points are

then multiplied by the number of States worked (as defined in Rule 6).

9.—Bonuses will be added to the score after multiplying (rule 8). The bonuses are as follows:—

Contacts on 160 MX — 60 points for each State worked.

Contacts on 80 MX.—20 points for each State worked.

Contacts on 40 MX.—20 points for each State worked.

Contacts on 20 MX.—30 points for each State worked.

Contacts on 10 MX.—60 points for each State worked.

Contacts on 5 MX. — 500 points for each State worked.

The sum of bonuses plus those points scored as in Rule 8 will constitute the grand total score.

10.—The cypher to be exchanged will consist of 10 letters and figures. The first five are to be chosen by the entrant, the remaining five being the first five of the last station contacted.

Example:—Station VK7LL works VK2OL for his first contact, and the cypher given by VK7LL would be XMPZ1AAAAA, and that given by VK2OL would be QCHV1AAAAA. The cypher given by VK7LL to the next station worked would then be XMPZ2QCHV1. The figure shown as the fifth in the cypher corresponds to the number of contacts had by the station, in the contest. When the number of contacts reaches double figures the fourth letter is dropped and a figure substituted, thus—XMP10. When the number of contacts reaches three figures a further letter is dropped and the figure substituted. Thus VK7LL would use for his 105th contact XM105 plus the first five of the last station worked.

11.—All logs must reach the Contest Manager, Box 2611W, Melbourne, by October 25th, 1939.

The logs must contain:—

(a) Time, date, band and call sign of station worked.

(b) Cypher sent and received at each contact.

(c) Points claimed, contact points and bonus points.

12.—The scores of the three leading competitors in each State will be totalled, and the State having the highest aggregate will be awarded the Trophy. Certificates will be awarded to the leading two stations in each State.

13.—The decision of the Federal Headquarters Executive of the W.I.A. will be final and binding in all matters.

14.—No contact on 56 MC to be between interstate stations situate less than 60 miles apart.

#### FOURTH ANNUAL GERMAN DX CONTEST RULES.

The DJDC 1939 is based upon radio contacts between European amateurs at one side and overseas amateurs on the other side as it did in 1938. The traffic again consists of two parts:

- (1) DX-QSO between Europe, German included, and overseas, with exchange of serial numbers.

There is a difference between DX-QSO

- (a) Overseas—Germany
- (b) Overseas — Non - German Europe

QTC Reports only can originate from DX-QSO as under (b)

- (2) QTC-QSO between Europe outside Germany or Overseas at one side and Germany at the other side.

Time: The four weekends of August, starting with the 5th. Each weekend from Saturday 1200 GMT to Sunday 2400 GMT.

Frequency bands: All amateur bands. There is a special band scoring that time. The German amateurs are unable to transmit on 56 mc, 3.6-4 mc and 1.75 mc bands. Off band working causes disqualification.

DX-QSO — Contacts between Europe, Germany included and Overseas. The idea of the DJDC is to get a maximum number of such contacts. Six-cipher serials are to be exchanged. The first three characters mean the RST (or RSN) with

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which the other amateur has been received, the last three mean the number of the DX-QSO. The first DX-QSO has been number 001, then 002, etc.

The general call for the contest is CQ DJDC. Amateurs who don't wish to participate are requested not to answer CQ DJDC, to avoid wasting time of the participants.

Only one DX-QSO is possible between the same stations per week-end as per frequency band.

QTC-Traffic: Each DX-QSO between European stations outside of Germany and Overseas may be the origin of a QTC-Report for each of the two partners of the respective DX-QSO.

By QTC-QSO between Non-German and German stations such QTC-Reports may be sent to Germany (and Danzig). QTC-QSO may be arranged by foreigners with Germany as it is wanted. Each time as many QTC may be transmitted as there are. Overseas stations may also send QTC-Reports in connection with DX-QSO.

The QTC-Reports are to be transmitted in the following manner:

- (1) Call of the worked station.
- (2) Local time of the DX-QSO in four characters (0001-2400).
- (3) The received serial.

The German partner of the QTC-QSO only has to verify the correct reception of the reports, f.i. 5 QTC OK. Points may only be claimed after such acknowledgment. From the above you will see:

European amateurs can work with German QTC-QSO only. The QTC-Reports never can show D- or YM-calls. Example: ON4AU reports to D . . . W6CUH 0515/589012. This means ON4AU to have worked W6CUH at any day of the contest at 0515 his local time, where he received the serial number 589012. The serial means with its first three characters that W6CUH heard ON4AU rst 589, the latter three characters mean the 12th DX-QSO of W6CUH. At his side, W6CUH would be able to report this QSO in the following manner:

ON4AU 2115/579005, that means the QSO took place at 2115 W 6-local time. ON4AU heard W6CUH with rst 579, and it was the 5th DX-QSO of ON4AU.

Scoring: The scoring is by points. For each DX-QSO may be claimed:

4 points between Germany or Danzig and Overseas.

2 points each between Europe (except D, YM) and Overseas.

Each correctly acknowledged QTC Report counts two points.

The points of this scoring are summed up and, for European foreign amateurs multiplied with the number of the German districts worked on each frequency band. The German districts are indicated by the final letters of the call. There are 19 districts: final letters A, B, C, D, F, G, H, I, J, K, L, M, N, O, P, R, T, U, V. The 20th district is formed by YM4-Danzig. The different characters 3 or 4 are not regarded.

Hence it follows: A station outside Germany which did not work any German QSO is getting no points. European stations therefore are forced to send QTC to Germany for they can work QTC-QSO only with Germany.

In U.S.A., Canada and Australia (W, VE, VK) each district forms a country of its own. The same concerns G, GI, GM, GW, etc.

Awards: There is no world-winner. The amateurs of each prefix zone are competing among themselves. The top-scorer of each country (district area) is awarded with a diploma. Two awards are given if there are five or more participants.

The amateur is the participant, not the station. If there is more than one operator each has to make a log of his own.

Log: There are no entrance formalities for the DJDC, just send the DASD your completed log. For the DX-QSO the log must show: Date, Time, Frequency Band, worked Station, serial number sent and received and the points claimed. For the QTC it is to show what German Stations received them and at what time the QTC-QSO started. The heading of the Log must show the name of the competitor, address, call and an abbreviated description of the station. At the end of the total score is to be calculated. Logs which reach the DASD after November 30th, 1939, can't be regarded. Each competitor is asked to send a log. If you do so you will get at least a nice verification card. Send all logs to:

Contest Manager DASD e.V. Berlin-Dahlem, Cecilienallee 4.

Pse mark stns outside the bands! Don't contact them!

# The Vee Beam Antenna

By B. R. Mann, VK3BM

Have you ever listened on 20 metres to a dying bard, when all but two or three outstanding DX signals fade out? Why do these favored few last maybe an hour longer than the rest? Were you able to contact them, you would find that it was neither high power nor good location that did the trick, but that each one was using an antenna of unusually low angle of radiation, probably a Vee or Rhombic. And to contact them you would need to use a vee or rhombic yourself! No other aerials, commonly used by hams, will produce such gain at such low angles of radiation.

**Which to Use.**—The vee is more suited to normal amateur work than the rhombic as it is easier to erect and adjust, and gives better coverage, its radiation pattern in the vertical plane being broader. The rhombic, when properly terminated and adjusted will give greater gain for point-to-point communications, but the design and adjustments are difficult, and when successful, permit only of communication over a limited area. A vee is better than an un-terminated rhombic of comparable size.

**Dimensions.**—The vee must be long to be really worth while. Other more compact types of aerial can be constructed with performance as good as a vee of less than 4 wavelengths per leg, but a vee of 5 wavelengths or more will give outstanding performance. Eight waves long seems to be the optimum and is the size favoured commercially. Longer beams were found to be too directive, for instance a 10 wavelength beam tried here covered only half the U.S. A. with a good signal!

**Height and Tilt.**—The height is not critical, as with a rhombic. The support at the apex should be high enough to be well clear of all obstacles, and should be near the shack for efficient feed. Excellent results were obtained without masts as the open ends, just by pulling the wires tight and fastening

them with a length of rope to the fence! However some improvement was noted when the ends were raised to a half-wave high. There may even be improved gain as the ends are raised further, for two reasons:—

1. It is raised higher above objects in the field.
2. The angle of radiation is lowered by tilting and can quite easily be too low, thereby directing much of one's good R.F. into the ground!

For example consider a vee 8 waves long. The tables indicate that maximum power is radiated at a vertical angle of 14 degrees. If the wire is tilted 18 degrees, then the main lobe is projected into the earth at an angle of 4 degrees! To obtain maximum results therefore, the tilt should be adjusted so that the main lobe just clears the horizon.

If equal performance is desired from the front and back of the vee, the wires should be horizontal. There is a notable difference in the results from the front and back of a tilted beam.

**The enclosed angle.**—In the table you will see that the angle enclosed between the wires at the apex varies with the number of waves on the wires, therefore it should theoretically be different for each band. However, an antenna designed for 20 metres works very effectively on 10 and 40 metres and even exhibits considerable gain and directivity on 80 metres.

**Direction.**—The horizontal direction of the main lobes is along a line midway between the two legs. The directions of different capitals of the world are given in "Amateur Radio" for April, 1939, P.8.

**Cutting to Frequency.**—It is suggested that the antenna be designed for one's favourite frequency on the 20 metre band. It will be found to function on any frequency over a very wide range. The table gives the lengths at two frequencies in the 14 mc band. For further dope on the method of determining the

length, see the article by VK2GU in "Amateur Radio," August, 1937, pp 9-12.

**Feeding and Coupling.**—Tuned feeders are necessary if the antenna is to be used over a range of bands and frequencies. Anyone unused to long wire antenna will find the tuning strange as one tunes over the band. Feeders included, there may be 20 halfwaves on the wires. Tuning from the HF to the LF end of the 20 metre band would be equivalent to increasing the physical length of the system by over 17 feet! There may be some difficulty in achieving this by tuning, in which case small inductances or short lengths of feeder could be switched in, or a Collins coupler used.

The system can be made to draw well on any frequency in the most used ham bands, and will give excellent results throughout.

We cannot give much dope on antenna coupling in this article, but if your method complies with these requirements, it is efficient:—

- Final draws normal plate current.
- The tuning of final and feeders is sharp.
- The coupling of the feeders to the final tank does not seriously react on the tuning of the latter.
- The current is the same in each feeder.
- The capacitances required for antenna system resonance are not abnormal.

**Constructional Dope.**—Number 14 gauge hard drawn copper wire has been found O.K. for beams up to 700 feet long, but the usual tough glass insulators are not strong enough.

Half inch dia. woven cotton halyards were not strong enough, and were replaced by  $\frac{1}{4}$  inch flexible steel cables, without any losses being noted. Several V beams suspended from the same mast did not appear to effect each other's operation.

**Multi Way Vee Beam.**—Here is an idea that is being constructed for for trial at present. To get world coverage at great gain, why not place Vees radially right around a central mast? For instance, 10 wires each 558 ft. 6 ins. long, arranged around the mast like spokes of a wheel, with an angle of 36 degrees between each would surely be the ideal ham all-band, all-world antenna! The feeders could be arranged as a 10-wire cage, and adjacent wires would be used on 10, 20 and 40 metres, alternate wires on 80 metres, and diametrically opposite wires on 160 metres.

If radial wires of 6 or 5 wave-lengths were used, respectively 9 or 8 wires would be needed, spaced 40 or 45 degrees apart.

**Receiving.**—If link coupling to tuner is used, and the link switched from transmitter to receiver, astounding gain is experienced. But more important is the directivity. Should you, for instance, decide to work Japan, at a suitable hour, you switch on the appropriate beam, and lo and behold, the band is full of J, KA, XU, PK, VK9, VK4, and possibly a couple of PY's, with all other sigs relegated to the distant background!

Perhaps it is unnecessary to add that this article is written mainly to interest those who, like the author, live in the open country, with limited power and almost unlimited space!

VEE BEAM ANTENNA DESIGN TABLE.

Number of Wavelengths per leg.	Included angle degrees.	Vertical Angel of Maximum Radiation	Length per leg at a frequency of			
			14050 KC	14350 KC	ft. in.	ft. in.
2	71	27	138	3	135	5
3	60	23	208	4	204	0
4	54	20	278	5	272	7
5	45	18	348	5	341	2
6	40	16	418	6	409	9
7	38	15	488	6	478	3
8	35	14	558	6	546	10

# Station Equipment

By VK5RE.

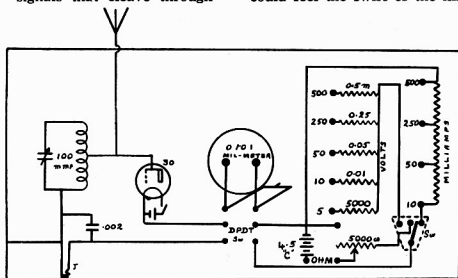
With Radio, as in every sphere of life, time, the irresistible, marches relentlessly ever onwards, and its many, many moons back to those days, when snarling arcs, and rotary gaps, belched their messages through space, to be deciphered by a finely adjusted cat whisker on a crystal!

Yet they are the stepping stones on which the march of progress placed her feet, stepping stones to the clean cut crystal signals of to-day — signals that cleave through

and a multi-Ohm-Volt-Mil-Meter.

After the income tax specialist had picked the bones white!! and after allocating (in a safe hide out) the beer money for the next twelve months, it was apparent that it was bordering on the edge of black magic, to think of even portion of the gear materializing.

However, inspiration came, and from that long distant valley in which the vast majority sleep — I could feel the swirl of the kilts, and



space, completely annihilating distances—

And as the march of progress has gone forward, in our transmitter design, so has our requirements for finer testing equipment advanced.

In the olden days, when the Arc gods ruled the ether, we were want to tune, and check, our transmitters, with a turn of fencing wire and a pea-lamp!

To-day, efficient stations demand efficient checking and testing gear.

Unfortunately, to-day—as in the past—instruments cost money, and equally unfortunately, the procuring of that self same money, is no less difficult to-day, than yesterday.

Here it was agreed that for 1939 operating, the following gear was an absolute necessity, i.e., A field strength meter, over modulator indicator, a check on the key clicks,

faintly hear the skirl of the bagpipes, as my ancestors played a fanfare to my idea that all those meters should be housed in the one container—using the one meter.

The mil-meter on the shelf here had the scale markings 0 to 1. However, a Sydney firm supplies a multi scale dial for three pence, so one was procured and fitted to the meter.

A shunt was wound for the 10, 50, 250, 500 mil readings, and the necessary resistors hunted out of the junk box for the various voltage readings.

Nothing original is claimed in the circuits used, they are definitely "a la Handbook", a type 30 tube does the trick in the field meter portion, and a double throw, double pole switch, of the Toggle variety, switches the meter in or out of the two circuits.

Continued on page 28

## Divisional Notes

To ensure insertion all copy must be in the hands of the Editor not later than the 18th of the month preceding publication.

### N.S.W. DIVISION

President: H. PETERSON, VK2HP.

Secretary: C. HORNE, VK2AIK.

Magazine Manager—J. H. FRASER, VK2AFJ.

You all will have noted that the magazine appears somewhat different this month. Yes, our Melbourne friends have re-organised the magazine, and here it is, but as Abraham Lincoln once said, "You ain't seen nothing yet. Amateur Radio is going to be improved and enlarged as time goes on.

However, the quickest way to improve the magazine is (1) to support the advertisers (2) send in technical articles for publication (this applies to you technical men in particular) and (3) to try and get new subscribers. If you know of any chap in your town who is interested in experimental radio, then get him to send in a sub for the magazine. It is only 6/- per annum post free. I will see to it that he gets the magazine promptly each month.

Now a few words about these notes. I have decided to publish notes from the Affiliated Clubs who sell "Amateur Radio" at their meetings. The space allotted will be strictly in proportion to the number of copies sold each month. You will see that notes from three clubs are included this month. Please let me have the notes by the 12th of the month.

About the country districts. The zones are being mapped out again and district registrars appointed. So far we have two men appointed. 2IG at Albury and 2KZ at Kurri Kurri. Notes will be published as soon as received from these district registrars, so if you live in their districts send on any information to them, otherwise send in a station report to me and I will publish it. Something along the lines of that sent in by 2VU in July issue will do me, but let me know something out of the ordinary if you have it. These last few remarks apply equally well to any city hams.

I am endeavouring to make the N.S.W. notes as interesting as possible to everybody. They are your notes so tell me your activities and I will publish them.

Here's wishing the Committee all the best with the new Magazine, and don't forget to help them yourselves, you fellows, please.

An outstanding DX contact was that of Reg Flood, 2BN, who worked VE50T on 80 metres at 10.30 p.m. late in June. The reports were RS 57 both ways. 2VN reports favourable conditions on 40 metres lately, and a rare one was a HK at 6.30 p.m. early in July.

About the all band CW contest this year. How about you country chaps joining in and seeing if VK2 can't win it this year. It will be an excellent chance of trying out all the bands, and finding just who is on these bands, so that if an emergency arose in your district, then you would know who you would be able to contact. The 160 metre contest will be another chance of testing the effectiveness of your communications. VK5JT is very keen on this emergency network. Anyone interested should get in touch with him. He is on daily on 40 metres at 8 a.m. Best of luck you chaps. 73 till next time.—2AFJ.

### UHF SECTION.

The second meeting of the recently formed ultra-high frequency section of this division was held at Y.M.C.A. Rooms on July 6. The president, D. B. Knock (2NO), took the chair, there being present 19 members and 2 visitors—2WJ and Mr. Phillips, a prospective ultra short wave listener.

It was decided at this meeting that the roster of station schedules for transmission in the 56 mc band should remain as previously, with the difference that the procedure be modified as required individually. Instead of maintaining an unbroken hour's transmission, stations will seek contacts at fifteen minute intervals. As the object primarily of the schedules was to insure that at least one station should be active on the 56 mc band each night, there is no necessity to stick rigorously to the hourly transmission if and when other stations are on the air for general communication.

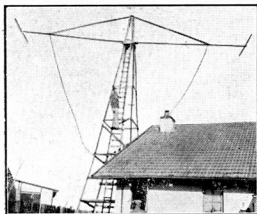
More activity is desirable during daylight hours at week-ends, when DX conditions are most likely to be favourable. In addition there may happen to be listeners at distant stations. However, it is worth while noting that there will always be a Sydney station on the air at night time, and thus a newcomer would be able to find the band.

A decision was reached regarding the "Australian Radio News" Cup. It has been donated by "The Bulletin" for outright win in U.H.F. Activities. This cup will go to the member of this Division of the W.I.A. who shows evidence of the most valuable and consistent experimental work on the 56 mc band during the period August 1, 1939, to July 31, 1940. The decision of the Council for this award will be final and binding.

All interested should listen for VK2W1 on 7200 KC the Sunday before the first Thursday in each month for news of the U.H.F. Section. Attempts will be made to



relay these broadcasts on 56 mc. It has also been suggested that more use be made of the 7 mc. band for the purpose of arranging and checking up on 56 mc. schedules. For information on schedules the following telephone numbers may be useful: 21Q-2AFQ: UJ 4465; 2NO: FW 2443; 2WJ: FJ 1222;



THE ROTARY BEAM AT VK2AJF  
VK2BZ on the ladder.

2VN: XM 1928; 2AFM: UW 8917; 2HP: FX 5768; 2TI-2WI: FX 3305; 2EM: JX 3438.

It had not been possible to arrange for a visiting lecturer for this meeting, but

Mr. E. Fanker (2HS) will lecture at the August meeting and Mr. R. Treharne (21Q), will be the lecturer on September 7th. The title of his lecture will be, "Some Interesting Phases of U.H.F. Work."

It is hoped to give notes from Mr. Fanker's lecture in the September issue. The epidiascope which Mr. Ron Rutherford is making for the Institute was given its initial try out at this meeting, and will be installed by the next meeting. It will be used at all meetings of the Institute and the lectures will be very interesting.

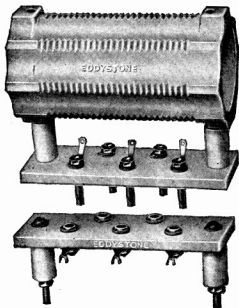
#### WAVERLY RADIO CLUB.

As no notes from the above club have appeared for some time I will give you a summary of the happenings since February.

The Club's dinner was held on the 28th February and was, as usual, a huge success. It was the 20th anniversary and already plans are in hand to make the 21st dinner the biggest on record.

Two field days have been held. The first on the five metre band was held in the vicinity of Avalon and the second at National Park on Sunday, 4th June. The last one was particularly successful. A transmitter signing 2BV was powered by a 1000 volt generator driven by friction from the back wheel of a car. Stations contacted during the day were 2ALX Orange, 2AKI Taree, 2BJ Chatswood, a report of Q4, R5 being received from Taree. On the 20th June the members were treated to a

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94 Robinson Road, Hawthorn, E.2., Vic.



very interesting lecture by M. Lusby B.Sc., 2WN. He selected for his subject "The application of waves in the ultra-high-frequency spectrum."

On the 27th June, George Paterson, 2AHJ, obliged with what one of the old-timers described as "the finest elementary lecture he had ever heard. Perfectly understandable, it was a pleasure to listen to."

Ask 2AFZ and 2TN about their famous DX effort, but don't tell them I told you.

2FJ and 2AFZ are rebuilding. They must be going in for "racks" in a big way, 'cause one Sydney firm has reported a shortage of ready cut chassis since they started.

Last Thursday, members and their friends tempted fate at ice-skating. Reports to hand seem to point out that more than xmitters were "on the ice."

### MANLY RADIO CLUB.

2MR.

2AMQ ("Little Jim") considers himself the DX king around Manly. 2AMS is getting a new rotary beam going as well as being very active on 40 mx. 2AFN is also building a beam in the hope of more QSOs and QSL's. 2ALB (Charlie) is chasing dope on supers. 2NG playing with 6L6s on 10 mx. Gordon (2ACJ) has an electrolytic condenser that blows smoke rings. Admission is 6d. but don't rush. Keep in the queue please.

### LAKEMBA RADIO CLUB.

2LR.

The second field test held by the above club in conjunction with the Bushwalkers' Federation Search and Rescue Section, was held at Glenbrook on the last Sunday in June. Two of the party were unfortunate enough to be held up with car trouble. 2EH broke an axle near Penrith but succeeded in communicating with the base station at Glenbrook and arranged to be picked up later in the day. 2VA's party burnt out a generator shortly after starting out, and had to hire another car.

The two inland stations operated by 2ACS and 8HB had no difficulty in maintaining constant communication with the base station operated by 2VA. The city station was 2ACE, with whom 2EH had no difficulty in communicating from the banks of the Nepean River at Penrith, and advised him of his plight.

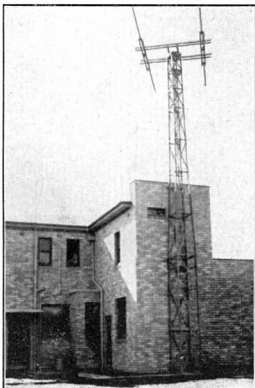
The apparatus used on this occasion was all low powered. The inland stations were operated by one or two 60 volt dry batteries for plate supply, while the base station only used about 5 watts. The day was a huge success and demonstrated once again to the Bushwalkers' Club that radio would be of considerable advantage to the parties, when occasion necessitates the searching for persons lost in the bush.

### COALFIELDS' NOTES.

2KZ Registrar.

2YO has completed the "2JU" super and it certainly looks very nice. 2XT has at last obtained a shack which is a one room affair, so as soon as the antenna is up he should be on the air, after having been QRT for some time. 2KZ doing very little on the bands. Building the "2JU" modulator with a few ideas added, hoping to be on fone next month, but still likes the old key. 2DG is building a new rig using 42, 807, 808, and is on fone on 20 at the moment, but like 2KZ, likes CW very much. 2YL as regular as the sun on 20 mx, and has

just completed a new rig. 2XQ has an idea about rebuilding. Has a very nice shack. John says visitors welcome any time at the shack. Will be getting married shortly. Good luck OM. 2PZ has designs on a new multi-band oscillator, and is also contemplating building a new frequency meter monitor. Guess this rebuilding craze has bitten the boys up this way. Silence from



VK2KB's NEW ROTARY AT NEWCASTLE.

these boys: 2KE, 2CW, 2MK, 2EP, 2KQ, 2CX, 2ACG. I would like to hear from you chaps some suggestions for a Northern Convention in Newcastle to be held during August or September. Don't forget to send along notes to me, boys, please. 73 MAX.

### KEEP THESE DATES FREE.

17th August—General Meeting.  
7th September. — U.H.F. Meeting, Mr. Ross Treharne cn "Some Interesting Phases of U.H.F. Work."

21st September. — General Meeting.  
Time—8 p.m. Place—Y.M.C.A. Rooms—325 Pitt Street

All members of the W.I.A. will be distressed to hear of the bereavement suffered by Mr. H. W. S. Caldecott through the death of his mother. Our sincere condolences are extended to him and his wife in their loss.

### VICTORIAN DIVISION KEY SECTION NOTES

(By VK3CX)

There must have been considerable confusion in the minds of the hams at the last K.P.S. meeting when they permitted 3OC to resign from the position of correspondent and elected the ex Lawd Mara of Gulchview to that exalted position. Having been his greatest admirer, no one knows better than I, how hard it is going to be

to produce something which will approach anywhere near the quality of the epistles penned by that worthy scribe 30C.

As it is rumoured that OC is going on fone, we now know why he did resign and speaking of fone let me tell you of the experience of JO who had occasion to cure some of his fone QRM in a BCL set. At the end of his experiment and when the BC set was again going as it should with one of Herb's chokes in it, the owner wanted to pay JO for his excellent service. That's a tip for all to go on fone and make some pocket money.

The boys on 14Mc are at last getting some revenge on the commercial stations which have been invading our band. How? Easily, they have installed E.C.O. You should hear them between 14400 and 14450 kc. Stumbled across our old friend WX the other night making noises on 14Mc where he was holding a mike party with a ham who rejoices in the call of 3 Queer Vices. I'm sure the shortwave listeners gained a good impression of ham radio from listening to the QSO.

The most important task of the last K.P. meeting was the election of a new Chairman and Secretary. After a very keen contest our good friend QW was elected Chairman, who, besides filling the chair most graciously, has at last killed all the bugs in his super and now threatens to work everything in sight on 7 Mc. The position of Secretary is now most capably filled by UM who, besides spending a lot of time with his dentist, has built himself a new exciter which will make noises on 14mc. The lads still manage to evince considerable interest in antennas and perhaps the most notable is that of IG who has a 3 element beam atop a 90 foot tower. Think he must be reaching for the stars when we consider that RX has to content himself with less than a 20 foot pole to hang his rotatory on. Another reason he is off the air is a brunette.

DM expects to do big things with an 809—his other hobby of stamp collecting is also shared by CX. Having used up all his good tubes DP is now reduced to using his previous throw-outs. Answering RJ's query as to c.w. men on 10 metres—yes, there's plenty there but they get misguided ideas and use fone. RC says he is going to be active on 10 but whether c.w. or not remains to be seen. ML treated the gang to an oration on Council's doings, magazine,

and other things and also handed out specially printed Lists of Countries for those who are dx minded. Same can be had on application to ML if you don't mind a lil advertising on the other side. ML took JO and CX three-quarters of the way home in his car, then said "NO," and JO and CX had to walk the rest.

There must be something in this business of getting new receivers, I think I'll have to get me one too as on enquiry at the meeting FR confesses to a new 5 tube TRF which out performs any super he says, MV has a new super with outperforms a 5TRF, VF is building a new super with all the trimmings, whatever that means. QV says the same, but besides the new receiver he also alleges a new transmitter and antenna. Using the usual language too when the screwdriver screws into the hand instead of the screw. SQ is having lotsa fun building a new rig while UK confesses to burning the wick at both ends—guess he is trying to make them meet. SG (now nicknamed Sleepy Gent), knows all about the 7200-7300 fone band—just ask him. VF is rejoicing in a QSL from someone who signed himself B2AB—he sounds as good as some of the others heard recently such as B4UP, T4TWO and POPI. CX ran into a foul call sign when he worked V14A/V14W who professed to be VS5AD on a freighter.

Charity begins at home and this month's gold plated pea-lamp is handed with full municipal honours to OC who sent in the solution to what a "Handle" really is—and it's not a Name as many thought. In closing I would implore you, if you don't like these notes, DON'T tell me about it, I've got enough troubles. Tell someone else and he might be induced to read this column too and in that way I'll convince the editor that I am building up the circulation, and finally don't forget to watch your local theatre for "Grand Jury Secrets," a real ham picture.—73.

## UHF SECTION.

By 3JO.

Section meeting night—Tuesday, Aug. 15th.

Office-Bearers elected at July Meeting:

Chairman—Mr. STEVENS, 3JO;

Secretary: Mr. SEWELL, 3IK.

Technical Advisers — Messrs. MORGAN, 3DH and STEVENS.

Our readers' attention is directed to the N.S.W. notes in the July issue wherein are

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details of the reformed UHF section in that State, and schedules of transmissions by its members. The division is to be congratulated for its enterprise and foresight in reforming the section and arranging such a roster of stations to keep regular transmissions on 56mc, and it is to be hoped that this idea will be adopted by other States.

56MC in Port Philip Bay.

On Sunday, August 20th a portable 56mc station will be located on a boat in the bay. All 56mc hams are requested to keep a good lookout for these signals and VK3EA, the owner of the boat, has generously offered its use for the occasion.

### VK3 FIVE METRE CONTEST

Sunday, August 27, 1939.

Object: The objects of the contest are twofold, namely—

- (a) To interest hams listening but as yet not operating on the five metre band in the idea of starting to transmit there.
- (b) To provide all entering with a chance to show what they can do under conditions which will avoid the farcical result of the last contest held on this band, wherein the number of logs submitted was about two.

Logs: All logs are to be on the forms which will be available from Herb. Stevens, VK3JO, and on completion, are to be posted to D. Randall Ayre, VK3KP, Equity Chambers, 472 Bourke Street, Melbourne, C.I., to reach him not later than noon on the Wednesday immediately following the Contest.

Prize: The winner will be awarded a modern tube of a type suited to ham work, the type being as yet undecided.

Time: 0900 to 1400 hours, Sunday 27th, August 1939.

- Rules:
- (a) Less than seven logs submitted will render the contest null and void. No QSO valid unless log is submitted from both ends.
  - (b) No limitations on power, frequency or type of transmission, other than it must occur on the five metre band and comply with P.M.G. regulations.
  - (c) Winner must have more QSOs than the average number for the contest but not necessarily the greatest number, and must have the shortest average time per QSO.
  - (d) In addition to the usual strength and readability reports, contestants must originate in each QSO a message of not less than 15 words giving a good reason why the five metre band should be more popular. This message to be copied at the receiving station and entered in the log for that QSO. A different message must be originated by each station for each QSO. The messages will also be logged by the transmitting station in order that the accuracy of the transfer can be checked. Points will be deducted for inaccuracy in this connection.

- (e) The duration of a QSO is to be measured from the commencement of the first call to the conclusion of the last signature, thus:—

1130: B de A

1131: A de B:—Report.

1132: B de A:—report and message.

1139: A de B:—message and sign.

1146: B de A:—sign.

1147: End of signature.

Time of QSO equals 47 minus 30, i.e., 17 min.

- (f) A given station may be worked a second time, providing that at least three contacts intervene between the second and first, and different messages are exchanged the second time. However, for the purpose of averaging the number of contacts, second QSOs will count as half a contact.
- (g) The W.I.A. contest managers (UHF Section) decision as to the winner to be final. The U.H.F. Sections contest manager is 3KP.

### EASTERN ZONE NOTES.

By 3 DG-VG.

3DI—Jim active on 40 mx during daytime when not busy servicing.

3GO-3LY.—Busy still at 3TR and will be for some time. Made visit to Stratford last week-end.

3HT—Dud has made an appearance on 80 mx, cw. of course and is working the ZL's hand over fist.

3HK—Keith putting out a fb signal on 80 mx and puts the boys right after examining their sigs on oscillograph.

3EA—Evan has not been heard or seen for months. The fish must be biting exceptionally well.

3IC—Ken has blown his 89 xtal osc., don't be downhearted boy.

3WE—Bill busy working contest as scribe writes these notes and seems to be hitting up a score.

VK3IL—Still missing, his whereabouts unknown by notes correspondents.

3XH—Stan having trouble to get out with his (?) watts.

3VG—Howard trying twenty metres, but thinks he will have to put up another antenna to get out decently.

3PR—Ron having trouble in getting Heising mod. to function as it should, also trying out new vibrator units.

3XZ-3HZ.—Reported to be rebuilding, so will hear from them later.

3IG—George still adding a few new countries to his already good score of 66.

3PG—Albert what about coming up to 80 mx, like your deaf pal Dud? It is worth while, take it from us.

3SS.—Keith still spilling a few surprises on the boys. Has gone QRO and doing fb work with 4/5ths of a watt to a 807 believe it or not.

3QB—Jack has not been reported for quite a time. What's the trouble Jack old chap?

3DG—Putting up another Vee Beam for W. using 4 wavelengths in each leg.

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## WESTERN ZONE

VK3HG.

3XG.—After much trouble and crystal shattering, is on 3.5 mc. for weekly sked and will be regular from now on.

3RA.—Apologies to you OM for the writer's error last month in putting your call as 3DA.

3II.—Batteries getting very sick and not on much. Will soon have the AC available. Half your luck OM.

3SZ.—On again after a period of inactivity due to defective tube in rig.

3TW.—Had night out when Redhead dance band of 18 YL's visited the town. On phone again after periodical rebuild.

3CK.—Has very little luck on 3.5 mc. with low power CW so works 7 mc mostly. Is interested in 14 mc also.

3WT.—Not heard lately. Must be changing his address like 3KX.

3JA.—Still raising a new country or two on 14 mc., and has hopes for a new receiver soon.

3GA.—Reported to be on but has not been heard here.

3XW.—Working a few on 14 mc. phone when conditions permit. Still experimenting with and adding tubes to the new receiver.

3HG.—With aid of 3II and second op. successfully raised big new stick. Official height, 125 feet six inches. New antennas will be three 12 wavelength V beams.

## NORTHERN ZONE NOTES.

By VK3BM.

3EC.—He started on his Rx and the new job is excellent.

3TL.—Has built a new receiver.

3CE.—Roy has improved his modulator. Quality is quite nice now.

3KY.—Has moved from Kyabram to Woodend.

3EF.—Bert intends to try 160 mx. Is doing well in VK-ZL 'phone contest.

3HR.—Charlie is reported to have obtained a Chapman 2-stroke engine to drive his alternator.

3QZ.—"Snow" reported Graham's CW note, the best heard on any band. Congrats, OM.

2AHY.—Eric has finalised at Lock 5, and will probably move to Broken Hill.

3PY has branched out in a new business venture in Warracknabeal.

3SE, of Ballarat, is looking for contacts on 160 MX.

3ZK.—Jim has built an fb new super het., improved his modulator, and rebuilt his transmitter.

3KM.—Mac and XYL Doris put out a nice sig. an 80 mx fone from Corryong.

3IJ.—Ian has just broken into 'phone operation from Marong, near Bendigo. Your sig. is fb. up here, Om.

3NN.—Herb has been heard only thrice since the junior op. arrived.

3OR.—Is erecting an 8JK beam for U.S.A., and has installed an 807 in final with fb results.

3HX.—Tom was heard once for the month. Is very busy.

3JG.—Johnny found after "Snow" had been and gone that a major rebuild was necessary!

Believe it or not, 3BM has taken to CW! But only during repairs to the convertor.

## QUEENSLAND DIVISION

The July meeting showed quite a large roll up of members as well as a few visitors. Mr. Vince Jeffs, 4VJ delivered a lecture on antennas, this subject being Vince's speciality. The present council seems to have succeeded in stimulating activity in the Queensland Division, which is certainly gratifying. A field day is to be held in August and as 5 mx will be the band chiefly used, it may revive interest in this band, which has not had much use in VK4 of late. It may be as well to mention here that Mr. F. Beech, 4FB has donated a cup for the most outstanding portable station of the year. Interested hams should communicate with the secretary. 4JP has also offered a tube to the ham who brings in the most new members. So go to it boys!

## PERSONAL PARS.

4CJ.—Cedric spends his spare time chewing the rag with the boys on 40 mx.

4AP.—Heard working the Yanks on 10 mx occasionally of a Sunday morning.

4RY.—Bill now has 99 countries—

4AW.—Down and nearly out with 'flu. You're not the only one, Arthur.

4KH.—On 20 mx trying out various microphones—don't like the reiss, particularly Bill. (Why not 5 metres?—Ed.)

4KA.—In Gordon Vale making short work of that elusive dx. Believe it's your antenna OM.

4PX.—Arthur putting out nice fone with an 801 in P.A. and 6L6C's as modulators.

4KS.—Working DX fone on 20 mx. Say Keith, the W.I.A. meetings are held on the first Friday in the month.

4JB.—Oscar putting out a very nice sig. which sure does go places.

4EL.—Works those Europeans like nobody's business. What's the secret?

4SA.—Alan finds fone handy to relieve the monotony when dx. just doesn't come through.

4FJ and 4EL and others troubled by key clicks from 4LT, and we believe that 4FB isn't entirely free either. Key click filters are easy to make so how about it Albert and Fred?

4FL.—Building new shack with lounge chairs, hot water system, and other comforts—wot next, Frank?

The fone business under 4FJ seems to be getting into nice running order. Roy keeps skeds with 4EI and 4TY at 6.45 a.m. and 7 a.m. respectively. 4XN in Dalby is also getting ready. You country men should keep a lookout for 4FJ on Tuesday and Saturday mornings on 40 mx. Please communicate with the W.I.A. in VIB if you wish to arrange skeds, in the event of not being able to contact the VIB station. 4GZ keeps bi-weekly skeds with 4FJ, and passes along any dope.

### BUNDABERG ZONE NOTES.

4XR.—Eric wants to buy a car—going to give his motor bike to 4XO. Might just as well as the only things 4XO doesn't do with it is to pay for the petrol and registration.

4XO.—Mark fairly quiet lately, so anything is likely to happen in the near future—4XR please note, he's generally the victim.

4UX.—Claude popped into town over "Show" and stayed with 4XO for a few days. Likes Bundy so much that he got a job and is now one of the boys of the "Cane City."

4JJ.—Busy fixing BCL sets and selling lighting plants.

4HP.—Please note that you should always switch on the rig when you want to work the dx—keying without the rig on "isn't done."

### SOUTH AUSTRALIAN DIVISION.

(VK5JT).

A meeting of the Council was held on July 5th when a further batch of applications for membership were dealt with. Members should note that "Amateur Radio" is now posted direct from the publishers to those who are financial only, so if you want your copy be sure and send in your subs. I suppose most of you read the article in "QST," which stated that the ARRL and the French Radio Society were lodging a vigorous protest against the French station that had started broadcasting on the 7 mc. band. This has had the desired effect as the station has closed down. Here you have an instance of what can be done by a strongly organised body. If the licensed experimenters want their interests protected they should join the W.I.A. and so have a strong society to stick up for their rights.

A test was held on 160 metre band on Sunday, July 9 to ascertain the distance over which signals could be reliably received during daylight. Whether it was due to skip or lack of interest on the country chaps' part, the only signals heard were VK5FM, VK5RN, and VK5JT. Les Catford, VK5LC, reported that he had heard the signals at Gladstone, 150 miles away. I would like to see all the country hams on in the 160 metre and the All Band CW Fisk Contests during September.

Usually, there are only two or three on and so it is not very interesting. VK5FM (Pete Bowman), is still running the broadcast session for the benefit of country members at 9 a.m. on 7 mc. If you have any suggestions or ideas put them through him as he is your rep. on the Council.

Overcrowding of bands.—Some of the bands seem overcrowded, especially with fone. The following suggestions to split

them us should help. For local contacts, fone and CW, use 5 and 160 metres. For State contacts, fone and CW, use 160 and 80 metres. Interstate, fone 80 and for CW 80 and 40 metres (fone only to be used on 40 metre band between 10 p.m. and 8 a.m.), except during emergency working). For DX (outside Australia), 10 and 20 metres. Now give these ideas a try out chaps and clear up some of the racket on 20 and 40 metres. I notice the country chaps lately seem to concentrate solely on fone, what's gone wrong with your keys or is it your receiver has no BFO?

AUSTRALIAN-WIDE EMERGENCY NETWORK.—A motion was carried at last Convention to organise this. Nothing has been heard of it so far. In Adelaide we have organised a City Network and have the names, addresses, place where working, fone numbers (work and home), gear, hours available, means of transport, of the city chaps who are willing to act. To swing it into operation all that is required is a telephone ring from the G.P.O. or the National Safety Council to the Control Officer (VK5JT). Now what about the other State Divisions doing the same in each capital city. Then daily skeds could be maintained. To get the ball rolling skeds are already being held daily on 7 mc. between VK2AFJ and VK5JT at 7.45 a.m. EST. So join in VK4-3-7 and 6. If you don't hear all the States you can always QSP. Country Hams interested could make skeds amongst themselves and the city Control officers, the idea being to form lines of communication throughout the whole of Australia with daily skeds, morning, noon or night, on any band. Traffic could be originated and routed around Australia to see what we could do and how quickly we could get in touch with any particular town. This, besides being interesting in itself, would be appreciated by the Authorities in times of emergency, especially breakdown of telegraph lines, etc.

The Postal Department having already intimated that they would be glad to use us in times of breakdowns, but stated that all communications must be in MORSE (CW). Actually we are not in a position to help them if they require us, so what about it Hams? The Yanks have had emergency networks going for years, and have done some very useful work. Country Hams write to your Divisional Councils offering to fill the breach at your town, and send in full particulars. The procedure for postal breakdowns is that as soon as the lines go dead the G.P.O. rings the Control officer, and at the other end the Postmaster gets hold of the local ham, they both go on the air immediately, and contact and push the traffic through. Well this is enough for one session, but I hope all the licensed experimenters will join the W.I.A. immediately, and also enter into the emergency and traffic handling idea with enthusiasm.—73.

### WESTERN AUSTRALIAN DIVISION.

Division meets on Second Tuesday each month, at 8 p.m.

July general meeting saw a good attendance and a good trek towards the Treasurer with annual subs.

Announcement of officers for the coming year was made, and once again 6MW (W. Weston) is divisional president, with 6GM

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and 6BB vice-presidents, 6CX Secretary, 6KS Treasurer. A new departure for VK6—the formation of a U.H.F. section—was discussed, and a committee comprising 6BB, 6FR, 6GB, 6KW and 6LH elected. On the motion of 6AF it was decided to entrust to the T.D.S. committee the task of drawing up rules and scoring systems for the various annual competitions, sponsored by the division, to remove any vagueness that may exist as to what is expected of competitors.

A very good suggestion came from 6LH, who spoke on the necessity for a "host" at meetings, to look after newcomers and visitors, and see they are introduced to the members. A motion to this effect was carried, and two members chosen to act as "Host" and "Deputy Host" respectively. Wisecracks, freely indulged in, about the need for fancy costume to distinguish these gentlemen, finally resolved into a serious suggestion (adopted) that they wear small ribbons in their lapels, with their "titles" thereon.

The meeting closed, and a suggestion period opened which lasted until 11 p.m., the time seeming to fly past as member after member got up and spoke his piece. Some very interesting points of view were brought to light, and if only a few of the suggestions are acted upon, the coming year should be a good one.

Undamped waves.—

6KB now off sick list and attended July meeting.

6KO heard lately testing fone.

6WS very pleased about his "S.W. and T." trophy for station photo and write-up.

6RU—the "postman's pal"—gets so many QSL's, the mailman complains. Don't forget his Xmas-box, Jim!

6ZX has a snappy band-switch xmitter, and flits about from band to band, working what's to be worked, and occasionally coming up to the surface (7 mc. to you) to say "hullo" to the boys.

6IG planning final stage for new TZ40, and hopes to modulate with 6L6ga. When do we hear that velocity mike, Ian?

6HT, 6FL, 6RW, 6AZ, 6AH, 6AW, 6GL, 6LM and 6RL are the most active country stations these days.

Flash! Volunteer fire-brigades, police, and several divisions of infantry rushed to Maylands recently to investigate strange phenomenon noted. Those brave enough to approach close to the scene tell of a certain VK6 found in his shack coaxing large volumes of acrid smoke from a "heavy blunt instrument." Gas-mask production will be speeded up in the stricken area.

Those who attended the Annual Dinner (June 17) had a jolly good time, and the only regret was that more country members were not able to attend. Trophies were presented to their winners—6MW ("West Australian" cup for third time and "keeps"), 6KW (Senior R.I.s trophy), 6MW and 6GL (tie for Hayman trophy), 6GM (Carl Cohen trophy), 6GM (President's cup), 6GM (D.F. Field Day cup), 6AF (7 mc. Field Day cup), 6AF (6BB "809" trophy), 6IG (56 mc. Field Day cup), and 6WZ (6AB cup). A new "West Australian" cup was offered for the coming year by West Australian Newspapers Ltd., an RCA Velocity mike by Nicholson's Ltd.,

Continued on Page 28

## HAMADS

Advertising space in these columns is available to those wishing to sell buy or exchange.

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### ACCURATELY GROUND CRYSTALS.

AT cuts, 7mc., 22/6; 3.5 mc., 20/-; Mounts, 8/2, large, 9/2; Chokes, 200 ma, 2/6; 500ma, 5/-; Bugs, 35/-, postage (4lb.) extra. VK3RJ., Landale St., Box Hill, Vic.

One only DEMONSTRATION MODEL SUPER SKYRIDER at Greatly Reduced Price from JOE KILGARIFF, Stanley St., Burnside, S.A. (VK5JT).

**CRYSTALS...** Accuracy .03%, 80 metre X cut, 10/-; 80 metre AT cut, 17/6; 40 metre X cut, £1/5/-; 40 metre BT cut, £1/5/-. Obtainable from Messrs. A. E. Harold, 123-125 Charlotte St., Brisbane.

### STRAY.

Did you hear the gem of Mr. J. Malone's reminiscences as told at his last official farwell dinner? It is about the woman who said that in regard to the payment of her wireless licence fee it had always been her practice to pay for it out of her maternity bonus—and would Mr. Malone mind allowing her an extension of six weeks for that year. Apparently it takes more than thermionic emission to keep a radio these days!

### AN ACTIVE HAM IN DARWIN.

VK5JT advises that there is now an active ham in the Northern Capital. VK5AB is the call, and he is on 14 mc. Give him a call, chaps.

and a handsome globe by C. H. Park, Esq., who also donated £10 to the division to provide trophies for competition by those so far unsuccessful in annual contests. It seems we're all set for a 100 per cent. year!

—73, VK6WZ.

## NEW GUINEA NOTES

By VK9VG.

Condx this month have been about the same as last, with all the Ws. in the States coming through, and a few South Americans on rare occasions, but very little else. In the early morning a few Europeans get through, but so far none have been worked from here, although the chaps down South seem to have no trouble. As far as I can see, contacts with VK are off for the usual "winter season" in the tropics, as I can't get through at all now. See you about Sept. VK's.

9XX—Came to light again with a rip and a shout of "CQ DX". Try and get on to 7 mc. and meet the gang again.

9DM—Had a nice letter from Dudley this month, telling me all about himself and doings. Got through to W4 ok with 10 watts as has great hopes of good dx with ketr models.

9DK—Ernie is not doing so much these days, due to a spot of bother with the house lighting plants.

9WL—Very busy lately with N.G.A.R.L. affairs, but still finds time to get on the air.

9BW—Bill has broken out in a fresh place with a fone rig, and it seems o.k.

9RM—Also worked VP5 on cw. The QSL argument has been forgotten since the arrival of a W mail last time I was down to see Peter he tried to trap me into a fone v cw. argument but nd.

9GW—Had a visit from George the other day and had a good chat. Has hopes of getting on the air soon again.

9MC—Shifting his QTH again, but still able to get on the air on 7 mc. for a chat now and then. Get down to 20 and do some dx with the troops.

9RC—We don't hear much of Ron, except on 7 mc. rag-chews, but still have hopes of getting him into dx one of these days.

9AD—We welcome you Breck on to the fold, and long life to the new rig.

9HB—The parts for the rig are on the way, and Harley has hopes of getting on in time to have some dx ready for next month. The rig is to be a three stage 6V6-6L6-807 around 40 watts input.

9NB—At present busy building lattice tower to carry 3 element beam. All suggestions re rotary beams gladly invited.

9VG—Just tagging along, sometimes on fone, sometimes on CW. Had to be in on this VP5 business as it took nearly an hr (till he had worked nearly all districts in VK) before he came back. Still trying to get Sth. Africa for Fone WAC.

Continued from Page 17

The field strength meter gives an actual indication of the power radiated by the antenna, this unit consists of the low reading mil-meter diode rectifier, and tuned circuit, or pick up coil.

When the head phones, are plugged into the phone jack, the presence of key clicks, excessive carrier hum, or quality of voice modulation can be determined, inserting a 10,000 ohm resistor into the phone jack the milliammeter will indicate over modulation peaks, as shown by a fluctuation of the steady carrier.

Neutralizing can also be carried out by this unit.

Of the multi-meter portion, little need be said, other than that it will do most everything, except pay the licence fee ! ! !

The complete unit is compact, and is housed in a container 7 inches x 10 inches x 6 inches, and once again from that vast valhalla, a muffled cheer, in Yiddish and Gaelic, drifted down thro' space, as my ancestors, accepted my decision with acclamation to use a Griffith Bros. tea tin as the container.

This tin, strengthened slightly, with scrap aluminium, and fitted with a new lid, home made from aluminium, forms an ideal container for this unit.

Altogether the complete unit is compact, neat, readily portable and, most important to every "ham," be he city, or country located, the cost is very, very low—in fact everything here was found in the junk box, excluding, of course, the mil-meter.

However, most modern stations have a low reading meter somewhere around, or sufficient "empties" under the tank stand, to offer the "bottle oh" as a substantial deposit on a good 0-to-1 mil-meter ! !

Plug in coils are used in the Field Strength Meter, and they are tuned to the frequency of the transmitter.

The coils are wound on 1½ inch diameter formers, three coils are required, the 5 to 10 metre coil has two turns, spaced ½ inch apart with the tap at the centre.

The 20 and 40 metre coil has 12 turns space wound, to cover a winding length of ¾ inch, with a tap taken on the fourth turn from the ground end.

For 80 and upwards, 60 turns are close wound on the former, with the tap at the 20th turn from the bottom.

All coils are wound with No. 22 DSC wire.

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VP2	"	9.000	"	" 18W.	..	Price £2/18/6
VP3	"	12.000	"	" 30W.	..	Price £5/10/0

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	.005	mf.	2000 Volt Working,	Bakelite Case		10/6
	.004	mf.	2000 Volt Working	Guaranteed 5000V.		12/6
	.002	mf.	2000 Volt Working,	Test 2500V. W.		12/6

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